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The claims:

1. A high strength impact resistant, elastic, composite laminate including:
at least two inner fibre plies between the outer layers, and
at least one dissipating element between the inner plies, wherein said at least one dissipating element dissipates and redirects a load applied to the laminate to tensile loading of at least one of said inner plies directed along its longitudinal axis.
2. The laminate according to Claim 1, wherein both inner plies are mainly tensilely loaded, said tensile loading being directed along the respective longitudinal axes of said inner plies.
3. The laminate according to Claim 1 or 2, wherein the at least one dissipating element substantially induces an equilibrium between said load and said tensile loading and a component of said load is redirected along a main fibre axis of said at least one inner ply.
4. The laminate according to any preceding Claim, wherein the at least one dissipating element is made from, but are not limited to, one or more of the following materials: metal, metal alloys, thermoplastics, plastics, polymers, foams, metallic foams, wood and rubber.
5. The laminate according to Claim 4, wherein said metal alloys include, but are not limited to: aluminium alloys, steel alloys, zinc alloys, titanium alloys, copper alloys, magnesium alloys, nickel alloys and alloy matrix composites.
6. The laminate according to any preceding Claim, wherein the at least one dissipating element is in the form of, but not limited to: sheet, corrugated sheet, mesh, tubular shape, spherical shape, foam or other foam-like structure.
7. The laminate according to Claim 4 or 5, wherein the at least one dissipating

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element is in the form of an expanded or rigidised metal.

8. The laminate according to any preceding Claim, wherein the at least one dissipating element has, but is not limited to: cross-ply, unidirectional, symmetric, balanced or quasi-isotropic orientation in the laminate.

9. The laminate according to any preceding Claim, wherein there is a plurality of dissipating elements.

10. The laminate according to claim 9, wherein a ply is formed by two or more of said dissipating elements.

11. The laminate according to claim 10, wherein said ply has, but is not limited to: cross-ply, unidirectional, symmetric, balanced or quasi-isotropic orientation in the laminate.

12. The laminate according to any preceding Claim, wherein one or both of said inner plies are reinforcement plies.

13. The laminate according to Claim 12, wherein one or both of said inner plies are made from single reinforcement fibre or hybrid reinforcement fibre.

14. The laminate according to Claim 13, wherein said single reinforcement fibre is made from one of, but not limited to: glass, aramid and carbon/graphite fibres.

15. The laminate according to Claim 13, wherein said hybrid reinforcement fibre is made from two or more of, but not limited to: glass, aramid and carbon/graphite fibres.

16. The laminate according to any one of claims 12 to 15, wherein said reinforcement fibres are formed as, but not limited to: unidirectional woven fibres,

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biaxial woven fibres, triaxial woven fibres, quadriaxial woven fibres, double-bias woven fibres, plain woven fibres or woven rovings.

17. The laminate according to any one of claims 12 to 16, wherein one or both of said inner plies have, but not limited to: cross-ply, unidirectional, symmetric, balanced, quasi-isotropic or hybrid orientation in the laminate.

18. The laminate according to any one of Claims 12 to 17, wherein there is a plurality of inner plies.

19. The laminate of any preceding Claim, wherein the polymer matrix is made from one or, but not limited to more thermosetting or thermoplastic matrix groups.

20. The laminate according to Claim 19, wherein said polymer matrix is made from one or more of the following, but not limited to: vinyl ester resin, epoxy resin, phenolic resin, polypropylene, nylon, fire retardant resin and corrosion resistant resin.

21. The laminate according to Claim 19 or 20, wherein said polymer matrix includes one or more adhesives.

22. The laminate according to any one of Claims 19 to 21, wherein said polymer matrix includes one or more coatings.

23. The laminate according to any one of Claims 19 to 22, wherein said polymer matrix includes one or more pigments.

24. The laminate according to any one of the preceding claims, wherein the laminate includes a pair of outer layers and a polymer matrix between each of the plies and the outer layers.

25. The laminate according to claim 24, wherein said outer layers are made from

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one or more of the following materials, but not limited to: metal, metal alloys, wood, plastics, rubber, paper, thermoplastics, polymers, foams and rubber.

26. The laminate according to Claim 25, wherein said metal alloys include, but are not limited to: aluminium alloys, steel alloys, zinc alloys, titanium alloys, copper alloys, magnesium alloys, nickel alloys, and alloy matrix composites.

27. The laminate according to any preceding Claim, further including at least one additional layer having, but not limited to: honeycomb, hybrid sandwich or foam structure.

28. The laminate according to Claim 27, wherein said additional layer is made from one or more of, but not limited to, the following materials: metal, wood, rubber, plastics, polymers, paper and thermoplastics.

29. The laminate according to any preceding Claim, wherein said laminate absorbs impact energy from but not limited to 3770 to about 4000 J.

30. The laminate according to any preceding Claim, wherein said laminate absorbs and redirects forces from, but not limited 150 to about 190 kN.

31. The laminate according to any preceding Claim, wherein said laminate has a density range from, but not limited to 1300 to about 2250 kg/m³.

32. The laminate according to any preceding Claim, wherein said inner plies are made from, but not limited to, E-glass quadriaxial woven fibre, said polymer matrix is substantially made from vinyl ester resin and said at least one dissipating element is an aluminium mesh.

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33. A nanostructure including:
at least two inner fibre plies between the outer layers, and
at least one dissipating element between the inner plies, wherein said at least one dissipating element dissipates and redirects a load applied to the laminate to tensile loading of at least one of said inner plies directed along its longitudinal axis.
34. The nanostructure according to Claim 33, wherein both inner plies are tensilely loaded, said tensile loading being directed along the respective longitudinal axes of said inner plies.
35. The nanostructure according to Claim 33 or 34, wherein the at least one dissipating element substantially includes an equilibrium between said load and said tensile loading and a component of said load is redirected along a main fibre axis of said at least one inner ply.
36. The nanostructure according to any one of Claims 33 to 35, wherein the at least one dissipating element is made from one or more of the following materials, but not limited to: metal, metal alloys, thermoplastics, plastics, polymers, foams, metallic foams, wood and rubber.
37. The nanostructure according to Claim 36, wherein said metal alloys include, but are not limited to: aluminium alloys, steel alloys, zinc alloys, titanium alloys, copper alloys, magnesium alloys, nickel alloys and alloy matrix composites.
38. The nanostructure according to one of Claims 33 to 37, wherein the at least one dissipating element is in the form of a, but not limited to: sheet, corrugated sheet, mesh, tubular shape, spherical shape, foam or foam-like structure.
39. The nanostructure according to Claim 37 or 38, wherein the at least one dissipating element is in the form, but not limited to expanded or rigidised metal.

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40. The nanostructure according to any one of Claims 33 to 39, wherein the at least one dissipating element has, but is not limited to: a cross-ply, unidirectional, symmetric, balanced or quasi-isotropic orientation in the nanostructure.
41. The nanostructure according to any one of Claims 33 to 40, wherein there is a plurality of dissipating elements.
42. The nanostructure according to any one of Claims 33 to 41, wherein one or both of said inner plies are reinforcement plies.
43. The nanostructure according to Claim 42, wherein one or both of said inner plies are made from single reinforcement fibre or hybrid reinforcement fibre.
44. The nanostructure according to Claim 43, wherein said single reinforcement fibre is made from one of , but is not limited to: glass, aramid and carbon/graphite fibre.
45. The nanostructure according to Claim 42 or 43, wherein said hybrid reinforcement fibre is made from two or more of, but not limited to: glass, aramid and carbon/graphite fibres.
46. The nanostructure according any one of Claims 42 to 45, wherein said reinforcement fibres are formed as, but not limited to: unidirectional woven fibres, biaxial woven fibres, triaxial woven fibres, quadriaxial woven fibres, double-bias woven fibres, plain woven fibres or woven rovings.
47. The nanostructure according to any one of claims 33 to 46, wherein one or both of said inner plies have, but are not limited to: a cross-ply, unidirectional, symmetric, balanced, quasi-isotropic or hybrid orientation in the nanostructure.
48. The nanostructure of any one of Claims 33 to 47, wherein the polymer matrix

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is made from one or more thermosetting and thermoplastic matrix groups.

49. The nanostructure according to Claim 48, wherein said polymer matrix is made from one or more of the following, but not limited to: vinyl ester resin, epoxy resin, phenolic resin, polypropylene, nylon, fire retardant resin and corrosion resistant resin.

50. The nanostructure according to Claim 48 or 49, wherein said polymer matrix includes one or more adhesives.

51. The nanostructure according to any one of Claims 48 to 50, wherein said polymer matrix includes one or more coatings.

52. The nanostructure according to any one of Claims 48 to 51, wherein said polymer matrix includes one or more pigments.

53. The nanostructure according to any one of claims 33 to 52, wherein the laminate includes a pair of outer layers and a polymer matrix between each of the plies and the outer layers.

54. The nanostructure according to claim 53, wherein said outer layers are made from one or more of the following materials, but are not limited to: metal, metal alloys, wood, plastics, rubber, paper, thermoplastics, polymers, foams and rubber.

55. The nanostructure according to Claim 54, wherein said metal alloys include, but are not limited to: aluminium alloys, steel alloys, zinc alloys, titanium alloys, copper alloys, magnesium alloys, nickel alloys, and alloy matrix composites.

56. The nanostructure according to any one of Claims 33 to 55, further including at least one additional layer having, but not limited to: a honeycomb, hybrid sandwich or foam structure.

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57. The nanostructure according to Claim 56, wherein said additional layer is made from one or more of the following materials, but not limited to: metal, wood, rubber, plastics, polymers, paper and thermoplastics.

58. The nanostructure according to any one of Claims 33 to 57, wherein said outer layers are made of, but are not limited to: E-glass quadriaxial woven fibre, said polymer matrix is substantially made from vinyl ester resin and said at least one dissipating element is made from aluminium mesh .

59. A laminate substantially as described with reference to the drawings and/or Examples.

60. A nanostructure substantially as described with reference to the drawings and/or Examples.